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Life Sciences Occasional Papers

Royal Ontario Museum
June 30, 1971

No. 18

The Trepostomatous Bryozoan *Stigmatella catenulata diversa* Parks and Dyer (1922), a synonym for *Mesotrypa diversa* (Parks and Dyer)

by Madeleine A. Fritz[1]

Among the specimens of the genus *Stigmatella* Ulrich and Bassler (1904) contained in the type collection of the Department of Invertebrate Palaeontology of the Royal Ontario Museum is one labelled *Stigmatella catenulata diversa* Parks and Dyer (1922). In my current study of the types of *Stigmatella* established by the above authors I have questioned the validity of the generic reference of this particular taxon. In order to substantiate this belief, technical work on the specimen was necessary. Broken fragments were pieced together to determine the shape of the zoarium; the original thin sections, which had deteriorated, were remounted, and one new section was prepared. After a study of the material it was evident that the species belonged to the genus *Mesotrypa*. A redescription of the specimen forms the subject of this paper.

Order TREPOSTOMATA Ulrich 1895
Family MONTICULIPORIDAE
Nicholson 1881 (emended Ulrich 1895)
Genus *Mesotrypa* Ulrich 1895

Type species—*Diplotrypa infida* Ulrich 1886.

Mesotrypa diversa (Parks and Dyer, 1922)
(Fig. 1, A–D; Fig. 2, A,B)

1922 *Stigmatella catenulata diversa* Parks and Dyer, p. 14, pl. III, figs. 8, 8a.

Original description—"The main portion of the zoarium of this variety is a roughly spindle-shaped mass about 40 mm long and 20 mm wide at the middle. From this central mass a few branches seem to have been given off but as they are broken away nothing can be said as to their length. The surface is covered with large rounded monticules at intervals of about five millimetres. The apertures of the zooecia between the monticules are fine and regular but on the summits a great diversity in size is to be observed.

"Vertical sections . . . [show] . . . more numerous diaphragms [compared with two varieties of *Stigmatella catenulata* Cumings and Galloway, 1913] . . . Mesopores few, except in restricted areas, not well developed in the mature region; zooecial walls crenulated and passing into the chain-like mesopores in the immature region.

"Tangential sections . . . very distinctive. The general field shows regular, polygonal, thin-walled zooecia to an average number of ten or eleven in the space of two millimetres. In this region mesopores are very few and small. Acanthopores are well developed, usually, but not always, at the angles of junction of the zooecial walls and sometimes slightly inflecting the tubes. At intervals of about five millimetres the structure is distinctly different as the zooecial tubes are

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large and rounded, the mesopores numerous and of very irregular shape, and acanthopores practically absent.

"Externally this variety can easily be recognized by the large rounded monticules; in tangential section the structure as described above is unique; . . ."

Emended description—

External features—A single specimen (Fig. 1, B,C), tapering at base but showing no sign of attachment, expanding to an inverted cone, linear dimension about 30 mm, maximum diameter 15 mm; from side of cone and from summit arise round to slightly flattened branches (six in all), base width five to ten mm, only bases preserved. Surface with conspicuous bun-like monticules 3.5 mm in diameter, raised 0.5 to 1 mm in height, distance from centre to centre generally 5 mm. Surface with protruding blunt acanthopores.

Tangential section—Zooecia angular, subangular to subcircular in intermonticular areas. Zooecial walls mostly 0.03 to 0.04 mm thick, rarely 0.05 mm. Wall concentrically laminated. Mesopores small and of various shapes. Acanthopores in places slightly inflecting, located at the juncture of zooecia, (Fig. 1, D; Fig. 2, A) eight to nine may occur where four zooecia are in contact, six to seven where three meet; diameter usually 0.02 to 0.03 mm, few 0.06 mm, central lumen surrounded by concentrically laminated tissue. Monticules with larger zooecia than in intermonticular space, commonly circular, and with more numerous mesopores, latter occasionally in small clusters of relatively large and small tubes (Fig. 1, A).

Longitudinal section—Zooecia at base briefly subprostrate, then broadly curved, finally straightening to intersect zooecial surface at right angles. Walls thin in axial zone, thickening slightly toward surface, finely crenulated throughout and laminated, laminae diverge at low angle and pass into the diaphragms. Acanthopores present throughout but petering out at various intervals, the last generation protrude bluntly at the surface; each with a clear central area from which laminae diverge at a low angle and pass into diaphragms when the two structures are in juxtaposition. Mesopores with close-set diaphragms, chain-like owing to constriction in walls where diaphragms and wall meet (Fig. 2, B); more numerous in deep sections than at surface. Diaphragms in zooecia relatively numerous; horizontal, oblique, curved to cystoid, six to seven in 1 mm, about one-half to two tube diameters apart.

Remarks—*Mesotrypa diversa* may be distinguished externally by the shape of the zoarium, by the conspicuous monticules, and by the protruding blunt acanthopores. *M. pauca* Utgaard and Perry (1964), the most closely related species, from a Richmond horizon resembles *M. diversa* in having few mesopores. *M. diversa*, however, is distinguished from *M. pauca* in having still fewer mesopores (Table I), fewer and smaller acanthopores which seldom inflect, finely crenulated zooecial walls, and fewer diaphragms.

Occurrence—Dundas Formation, Humber Member, Humber River, Upper Ordovician, Weston, Ontario.

Type—Holotype, Department of Invertebrate Palaeontology, Royal Ontario Museum, Toronto, ROM 1089H.R.

Holotype (2G128) and Paratype (2G129) of *M.pauca* are housed in the paleologic collection of the Indiana Geological Survey, Bloomington, Indiana.

Acknowledgments—Thanks are expressed to Mr. John Monteith, Department of Invertebrate Palaeontology, for the expert restoration of the specimen and for the skilful preparation of the thin sections, to Mr. L. Kisko, Department of Zoology, University of Toronto for his generous assistance with the statistical analyses, and to Miss Joan Burke for her careful typing of the manuscript.

I am indebted to Professor T. G. Perry, Department of Geology, Indiana University, Bloomington, Indiana, and to Dr. T. E. Bolton, Geological Survey of Canada, Ottawa, for their appraisal of this paper.

The photomicrographs were taken by Mr. B. O'Donovan, Department of Geology, University of Toronto.

TABLE I. Statistical comparison of sample means of *Mesotrypa diversa* (two sections of Holotype) and *M. pauca* (two specimens): results of *t* tests. Measurements given in millimetres.

N = Number; Par. = Parameters; S.D. = Standard Deviation; P = Probability

	M. diversa				*M. pauca*					
MEASURED	N	Par.	Mean ± Standard Error	S.D.	N	Par.	Mean ± Standard Error	S.D.	t	p
Number of zooecia in 2 mm in intermonticular or intermacular areas	36	7–9.5	8.4±0.14	0.81	20	7–9	DATA NOT AVAILABLE			
Number of entire mesopores in 1 sq. mm in intermonticular or intermacular areas	36	0–6	1.7±0.28	1.59	20	5–12	9.0±2.01	3.00	10.14	0.0001**
Number of entire acanthopores in 1 sq. mm in intermonticular or intermacular areas	20	15–27	20.9±4.68	3.13	20	22–29	25.0±5.59	10.00	1.70	0.1*
Measurements in millimetres of maximum apertural diameter of zooecia in monticule or maculae	26	0.28–0.32	0.22±0.04	0.02	10	0.28–0.35	0.31±0.10	0.02	12.85	0.0001**
Measurements in millimetres of maximum apertural diameter of zooecia in intermonticular or intermacular areas	26	0.16–0.22	0.19±0.04	0.02	20	0.18–0.25	0.21±0.05	0.05	1.67	0.1*

*Insignificant.
**Significant.

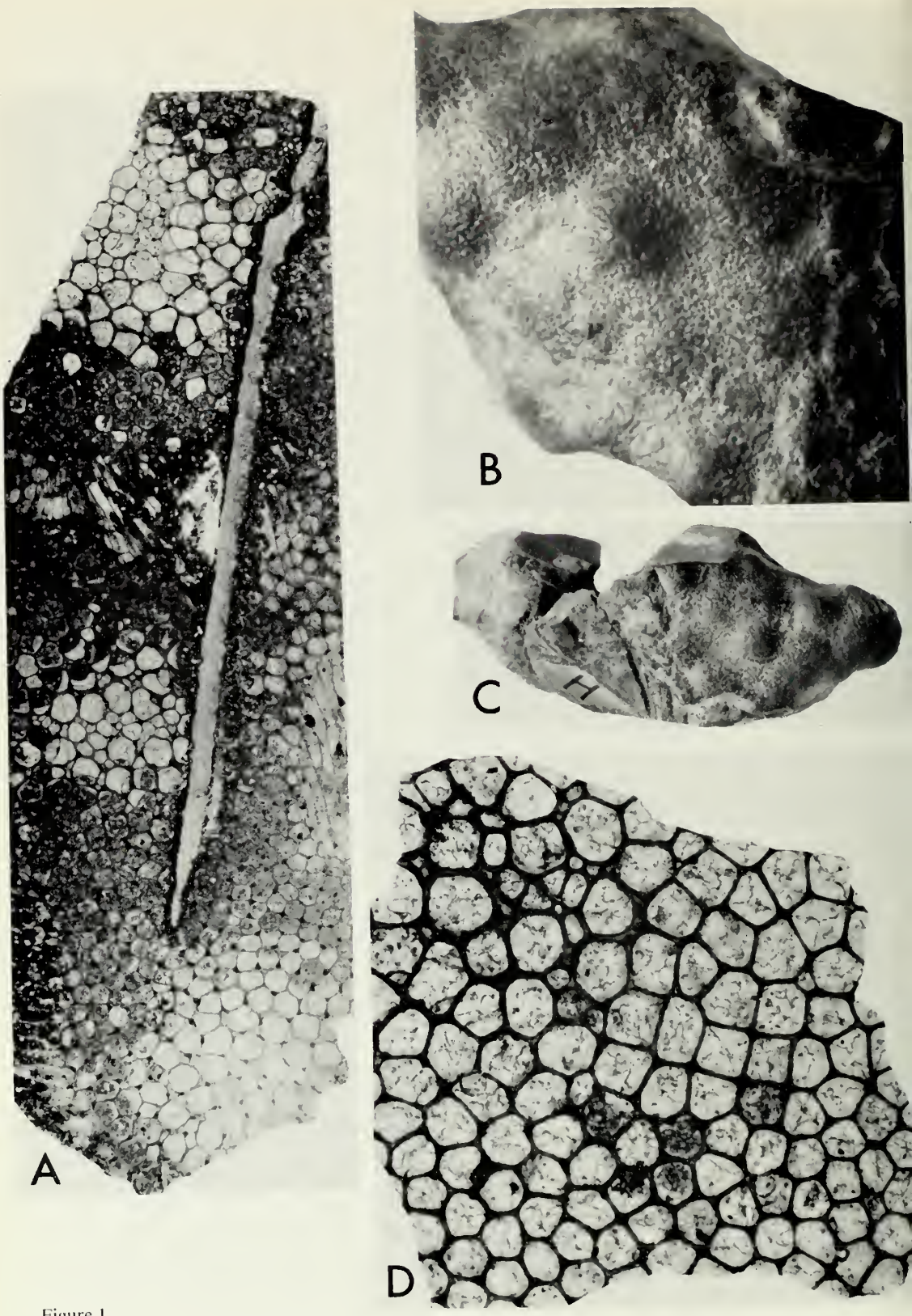


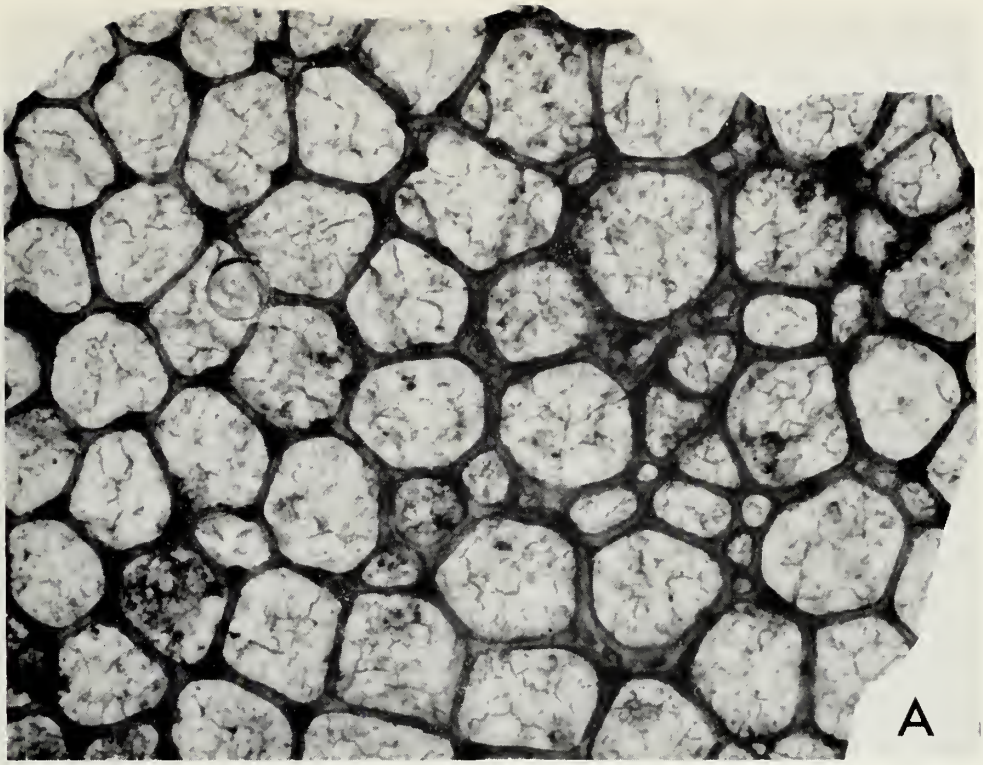
Figure 1
Mesotrypa diversa (Parks and Dyer). Holotype (ROM 1089H.R.)

A. Tangential section, showing in particular three monticules, × 15.

B. Portion of surface, × 4.

C. Entire specimen, × 2.

D. Tangential section, × 30.



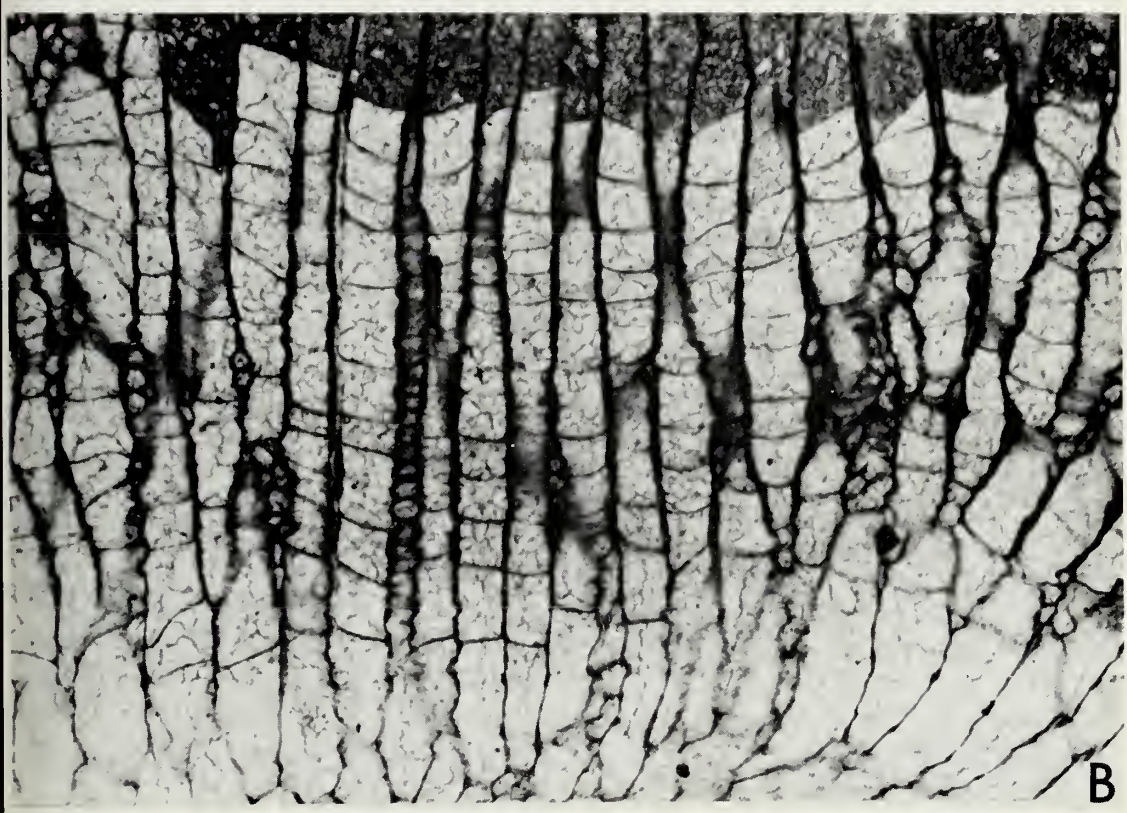


Figure 2
Mesotrypa diversa (Parks and Dyer), Holotype (ROM 1089H.R.)

A. Tangential section, × 60.
B. Longitudinal section, × 30.

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Suggested citation: Life Sci. Occ. Pap., R. Ont. Mus.

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